

# ***Armed Forces Epidemiology Board***

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## ***DoD Global Influenza Surveillance Program: 2003-2004 Summary***

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Chief, Epidemiology Services Branch  
Brooks City-Base, TX  
12 May 2004**







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# **DoD Influenza Surveillance**



- ▢ Two main components, largely funded by DoD-GEIS
    - **Population-based Recruit Surveillance: managed at NHRC San Diego**
      - FRI surveillance of trainee populations - all services
      - Military training centers track febrile respiratory incidence rates
      - Systematically collect viral specimens
    - **Worldwide Sentinel Surveillance: managed at Brooks City-Base, TX**
      - Sentinel sites collect specimens from ILI cases\*
      - Clinical specimens from sentinel and non-sentinel sites included
      - Ongoing interactions with CDC Influenza Branch (WHO Collaborating Lab)
      - Annual input to VRBPAC (as well as seed viruses for vaccines)
  - ▢ Additional data collection: lab summaries - Army MEDCENs
    - No systematic collection; clinical results only
- \* Focus on “vaccine breakthroughs” and severe disease this year

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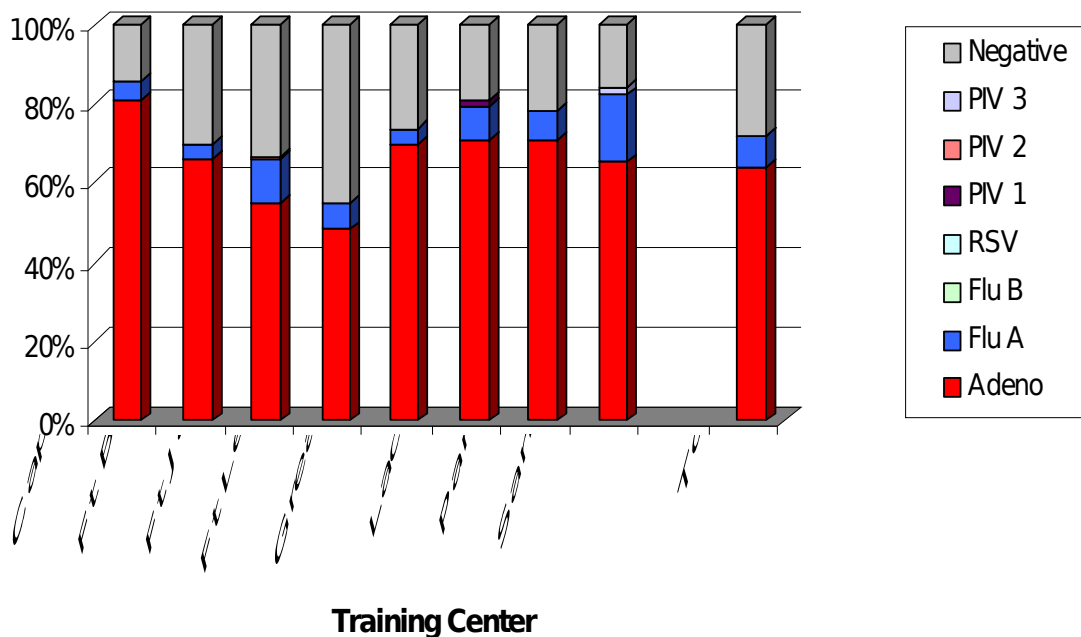


# Navy FRI Data

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## *NHRC Summary Results 03-04 Flu Season*



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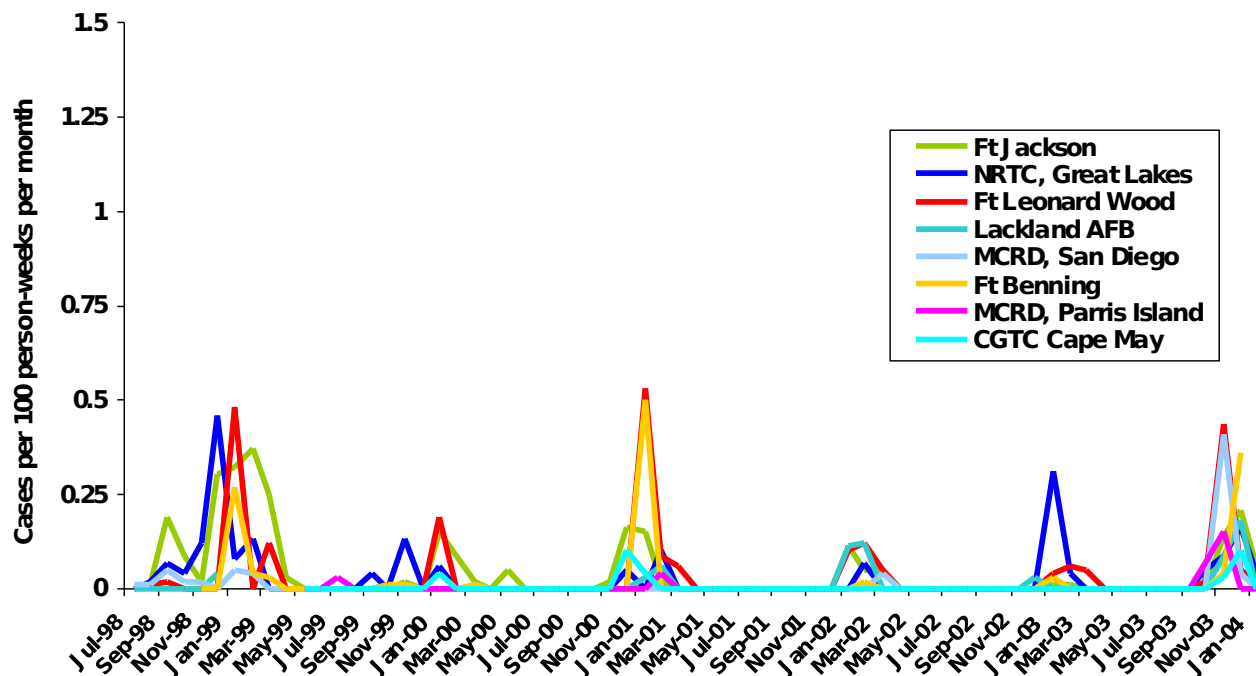


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# Seasonal Influenza Data Trainee Sites



## Influenza Infection Rates at Basic Training Centers



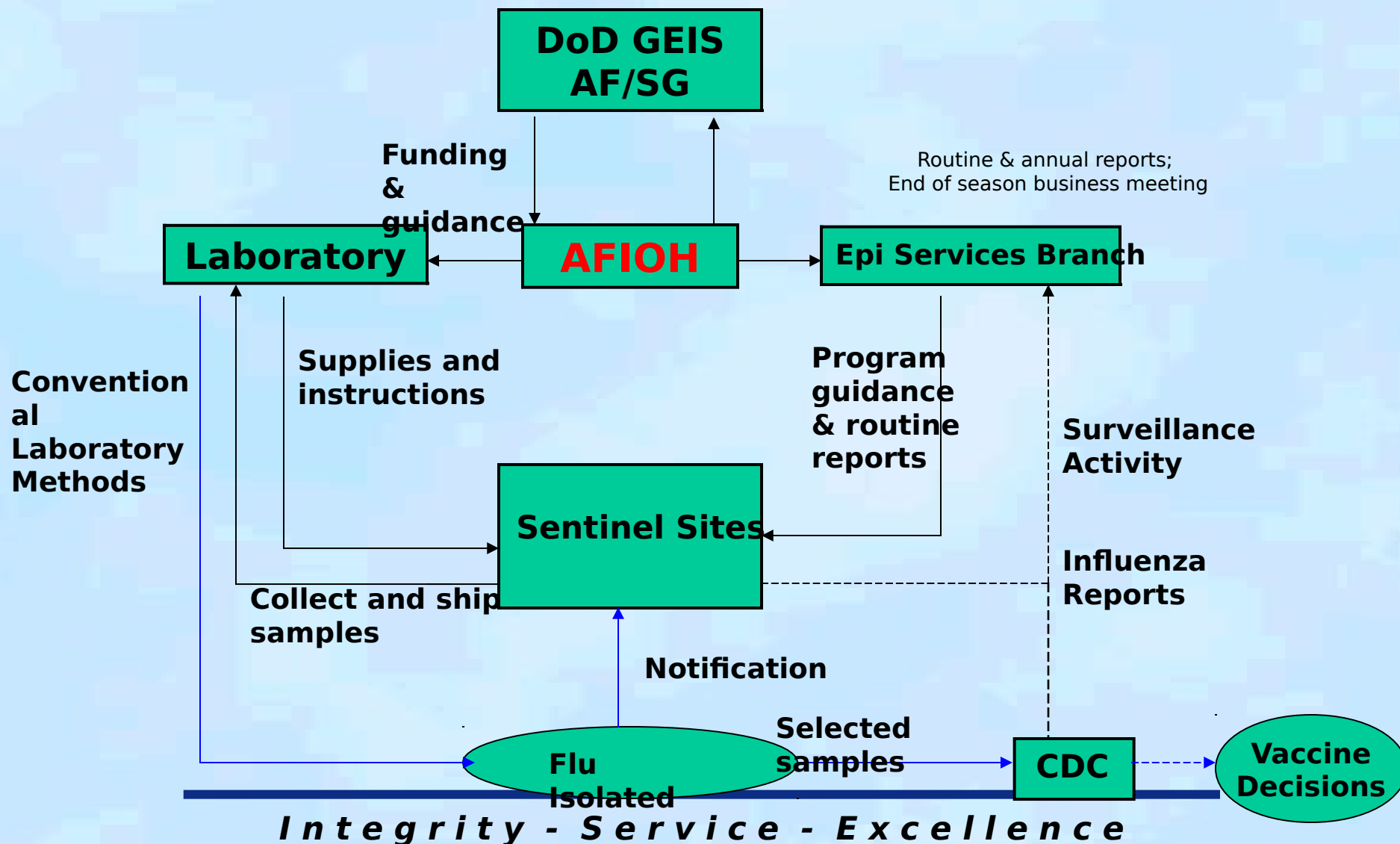
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# Worldwide Sentinel Surveillance







# 2003-2004 Influenza Sentinel Sites



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- ★ Sentinel Bases
- ✚ Clinics and Hospitals Associated with Overseas Research Labs
- ✱ Participating Overseas Local Labs
- ★ New Sentinel Bases

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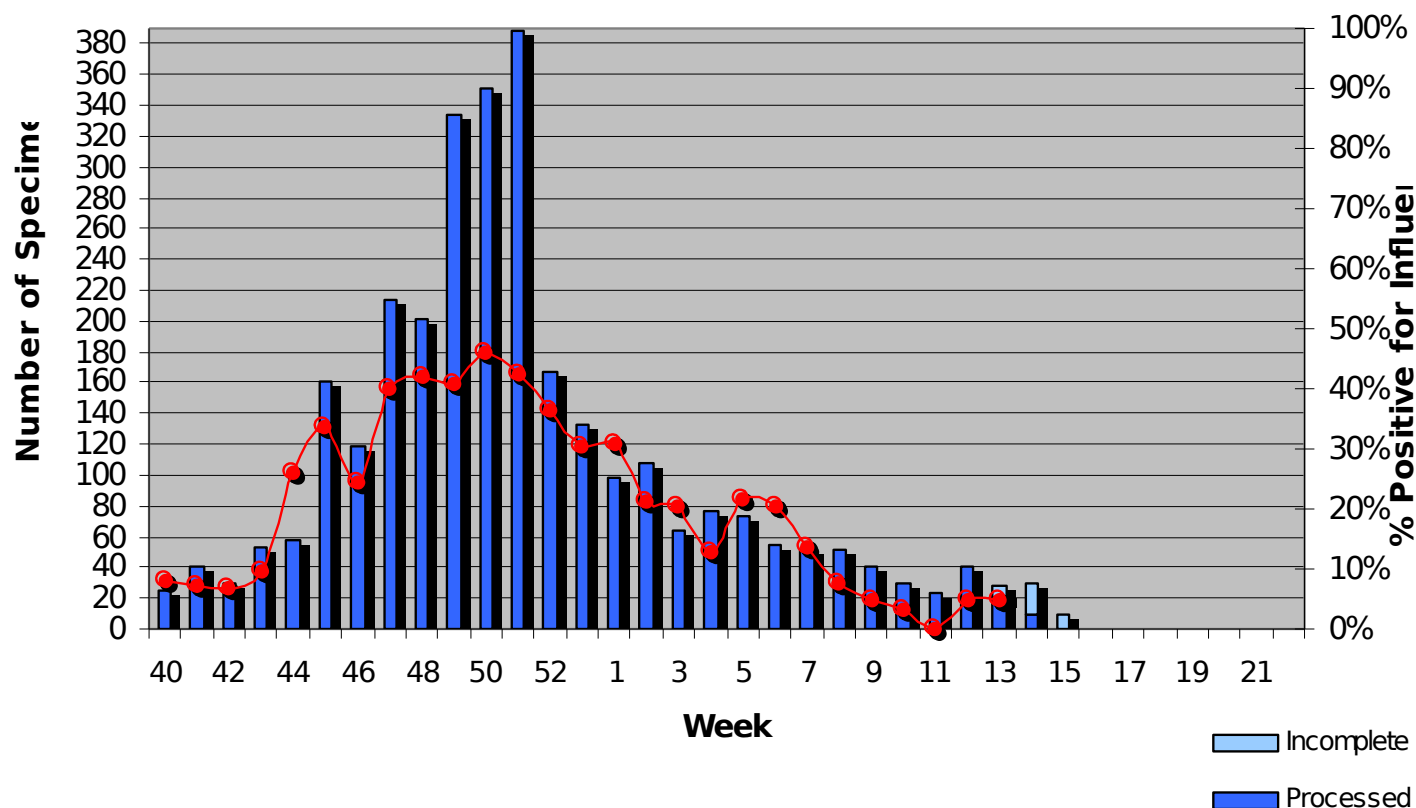


# Specimens Submitted



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## DoD Laboratory-based Influenza Surveillance Data Summary, 2003-2004



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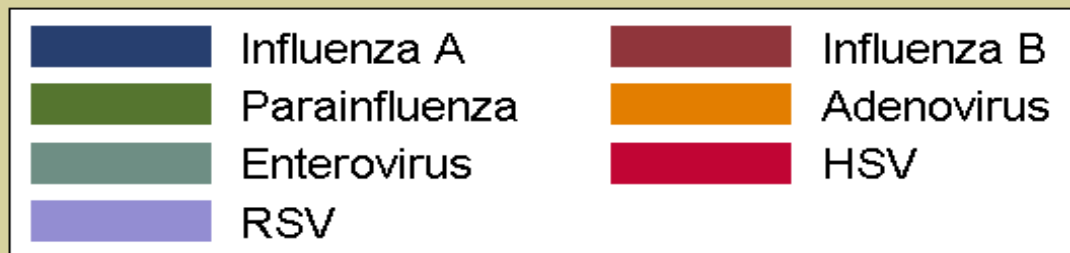
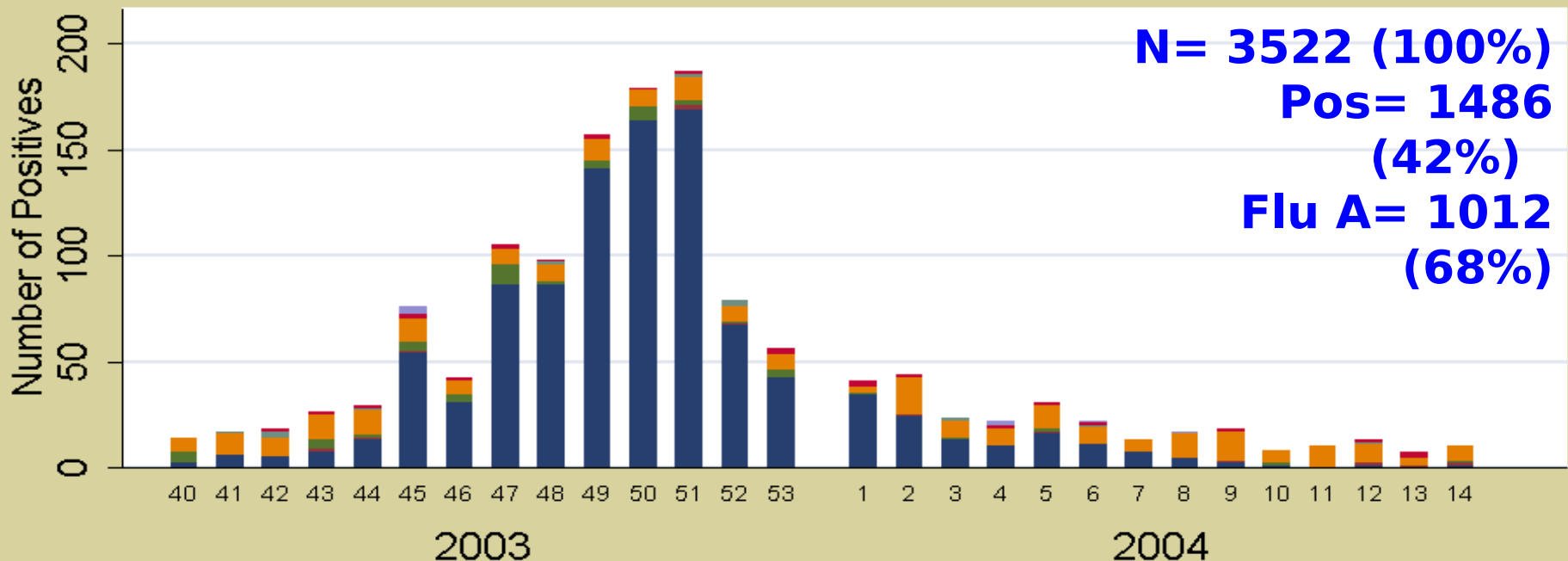


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# DoD-wide Isolates



## Positive Viral Results by Week and Year Influenza Season 2003-2004



As Of 20 Apr 2004



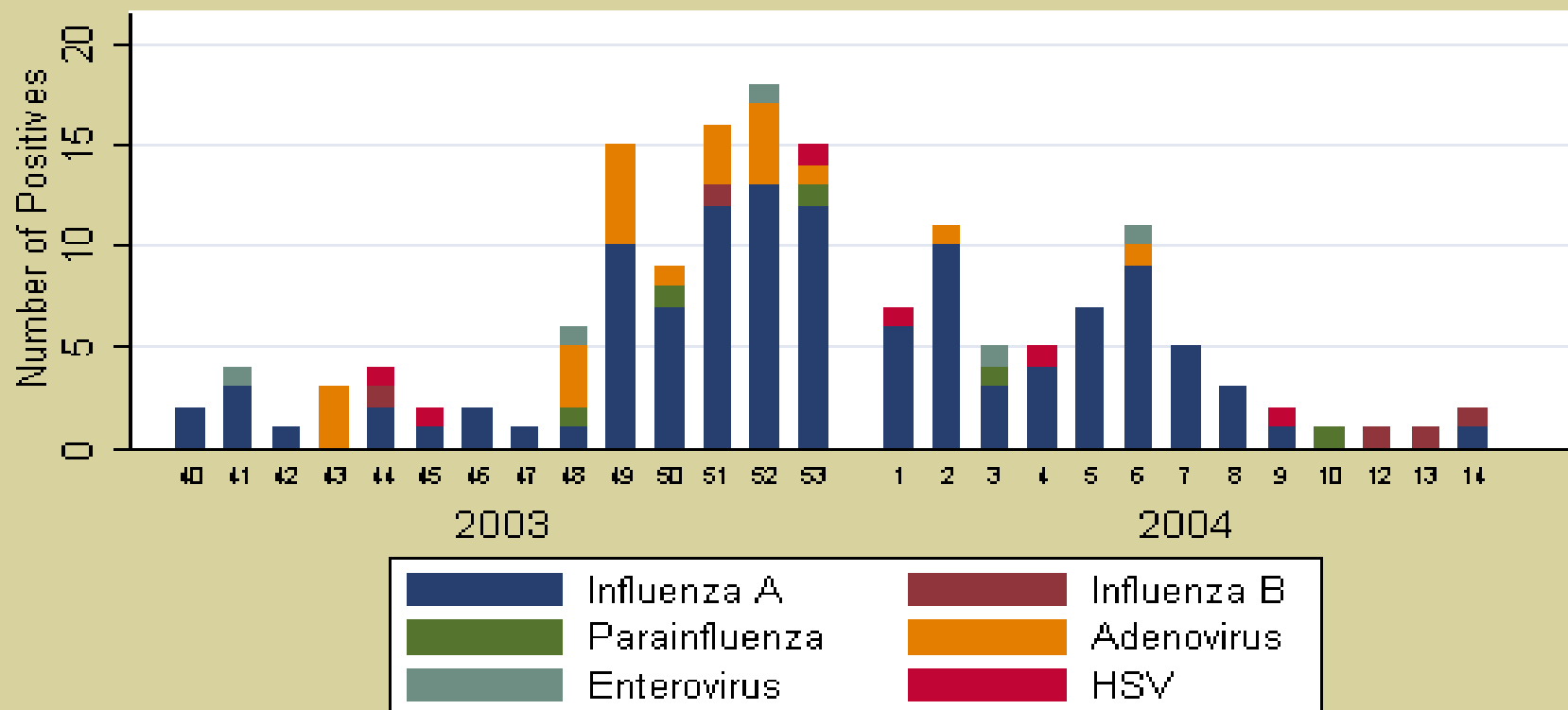


# Asia/Pacific Isolates



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## Positive Viral Results by Week and Year for Asia/Pacific Influenza Season 2003-2004



As of 22 Apr 2004

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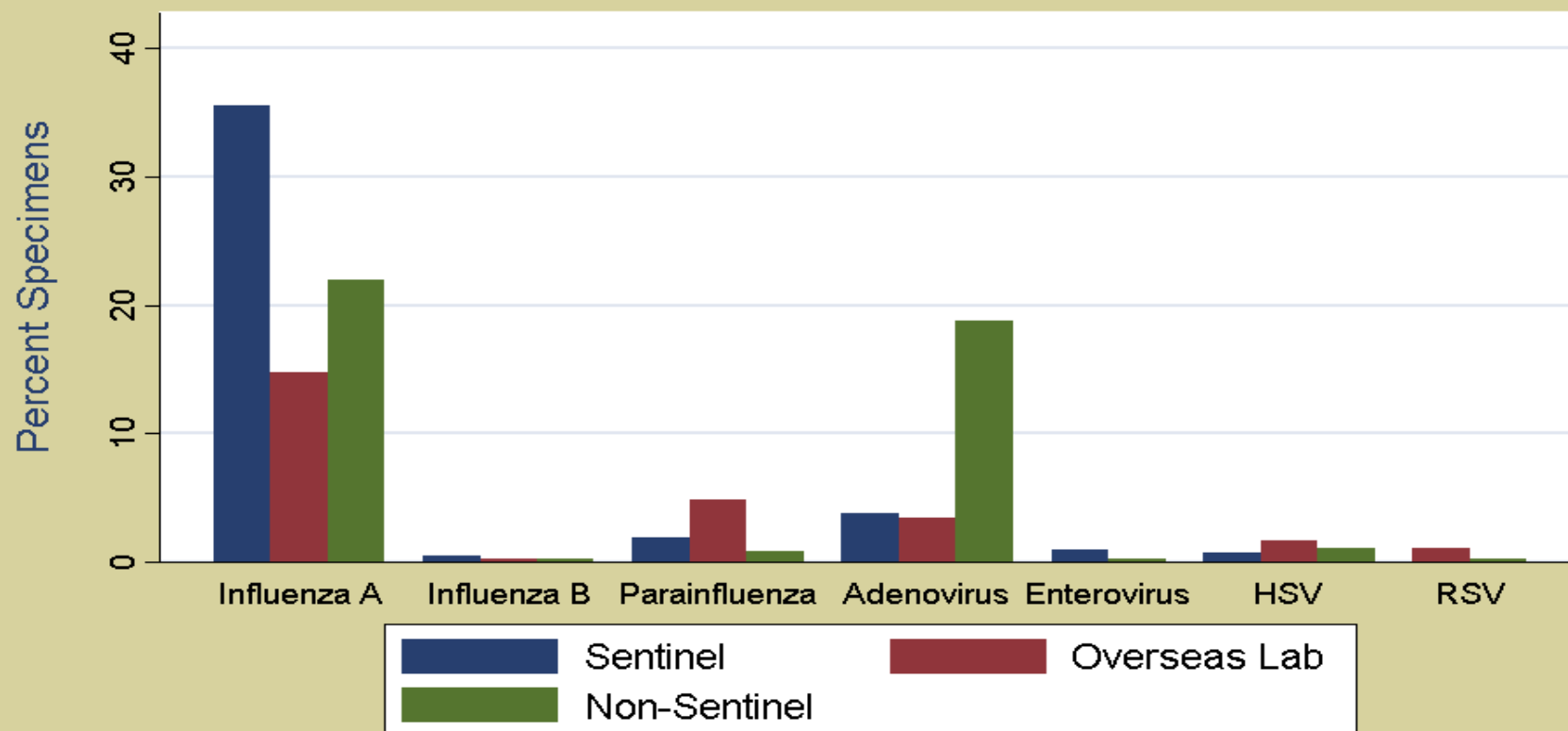


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# Specimen Source



Percent of Respiratory Virus Submissions  
by Sentinel Site Category  
Influenza Season 2003-2004

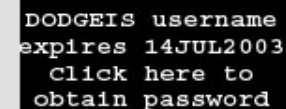


As of 21 Apr 2004





# ILI Surveillance

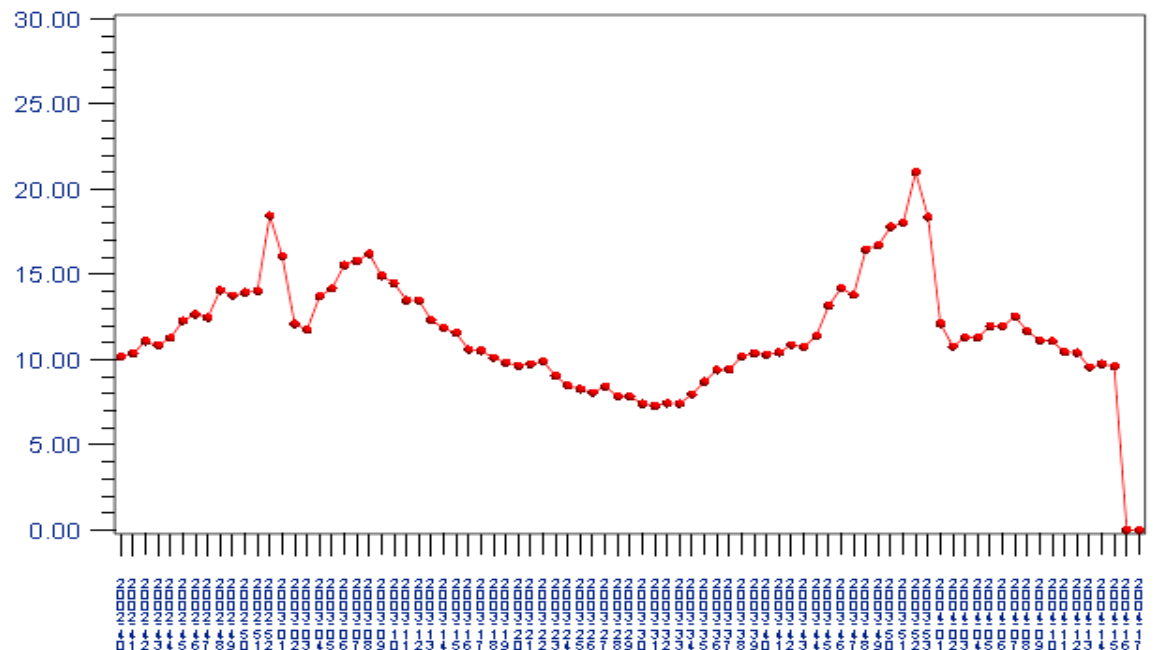


An Electronic Surveillance System for the Early Notification of Community-based Epidemics  
A DoD-GEIS Sponsored Surveillance Project

\*\*\*\*\* For OFFICIAL USE ONLY \*\*\*\*\*

**Apr**

### % of Visits for ILI at Global Military Health System



## YISH COUNTY SYMPOSIUM

COMA  
DERMHEM  
DERMINF  
FEVER  
GI  
NEURO  
RESP

### Age Group by Syndrome

ALL  
COMA  
DERMHEM  
DERMINF  
FEVER  
GI  
NEURO  
RESP

### ICD9 Groups by Syndrome

COMA  
DERMHEM  
DERMINF  
FEVER  
GI  
NEURO  
RESP

### Clinic Type by Syndrome

ALL  
COMA  
DERMHEM  
DERMINF  
FEVER  
GI  
NEURO  
RESP

## Recent Data

IL

 Internet

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# Improved DoD ILI Monitoring



## ILI Rate -- Global Military Health System

As of: 7 Apr 2004



Note: 2002-03 Data Only Available After Week 39  
Horizontal Line is Interseasonal Threshold

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# GIS - Influenza Activity



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Address <https://afioh.brooks.af.mil/pestilence/Influenza/>

Go Lin



• [RSRH Home](#)

- [DoD Flu Program Home Page](#)
- [Overview](#)
- [Background](#)
- [Season Summaries](#)
- [DoD Flu Program FAQs](#)

#### Influenza Links

- [Documents](#)
- [Informational Sites](#)

#### Surveillance

- [2000-01](#)
- [2001-02](#)
- [2002-03](#)
- [2003-04](#)

**NEW** Geographic Distribution of Surveillance Data (To view these files you will need the Adobe SVG Viewer plug-in for your browser or another SVG viewer.)

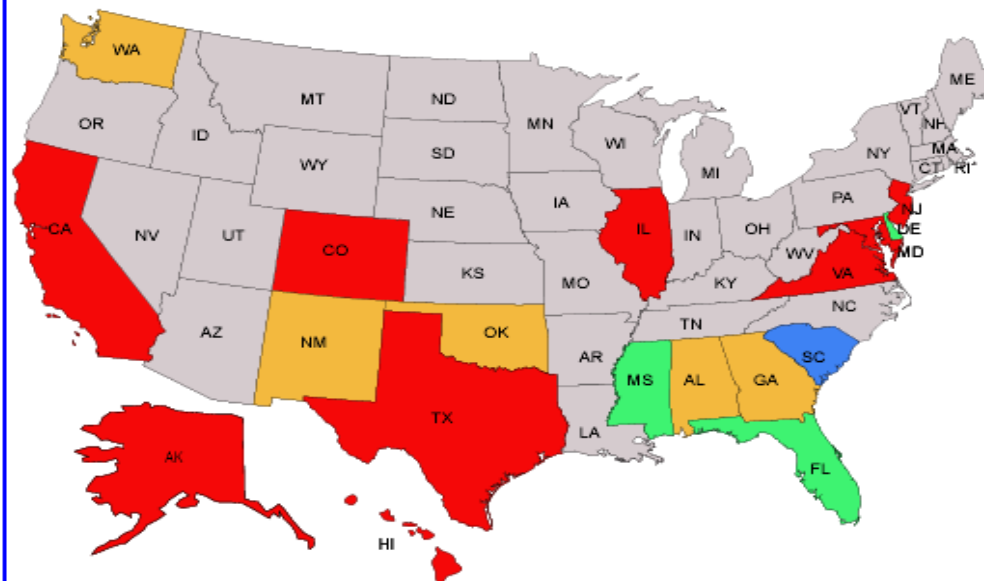
[Download the viewer](#)

USA Regions

- [2003-04](#) • [2003-04](#)

## Geographic Distribution of Influenza Surveillance Data for Military Sites submitting specimens - 2003

Click on a State map on the left to view Influenza Surveillance Data.



### Legend



Region	State	Event Count
East South Central Region	AL	14
Pacific Region	AK	34
Pacific Region	CA	58
Mountain Region	CO	64
South Atlantic Region	DE	3
South Atlantic Region	FL	4
South Atlantic Region	GA	28
Pacific Region	HI	94
East North Central Region	IL	57

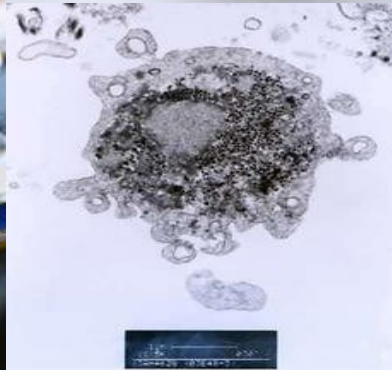
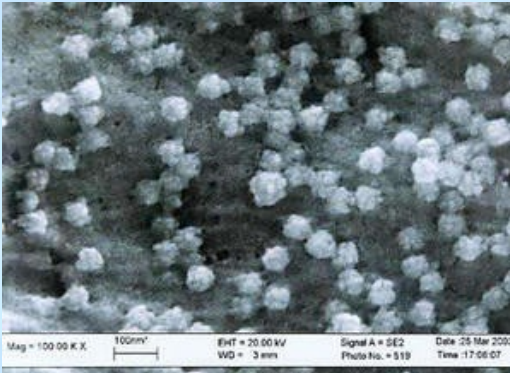
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# Dealing With Health Threats

## SARS, Avian Flu, Pulmonary Anthrax, et

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# **Vaccine Breakthroughs**



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## **▮ Data sources**

- AF vaccination tracking database**
- Influenza laboratory database**

## **▮ Breakthrough definition:**

**date of vaccination  $\geq$  14 days prior to specimen submission**

## **▮ Overall numbers: 22% breakthroughs with higher percentage in Asia-Pacific, deployed, and European locations**





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# **DoD Vaccine Effectiveness Studies**



- ▮ **Each service attempted to assess vaccine effectiveness this past influenza season**
- ▮ **Wide range of methods and results**

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# ***NHRC VE Data***



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- ▮ **Existing data from surveillance program**
  - **Trainees at 4 training bases**
  - **December 2003**
- ▮ **Influenza culture positives only**
- ▮ **Person-time analysis**
  - **Weeks at risk**
  - **Vaccinated vs. unvaccinated (2 wks post vax)**
- ▮ **Basic trainees arrived upon arrival**



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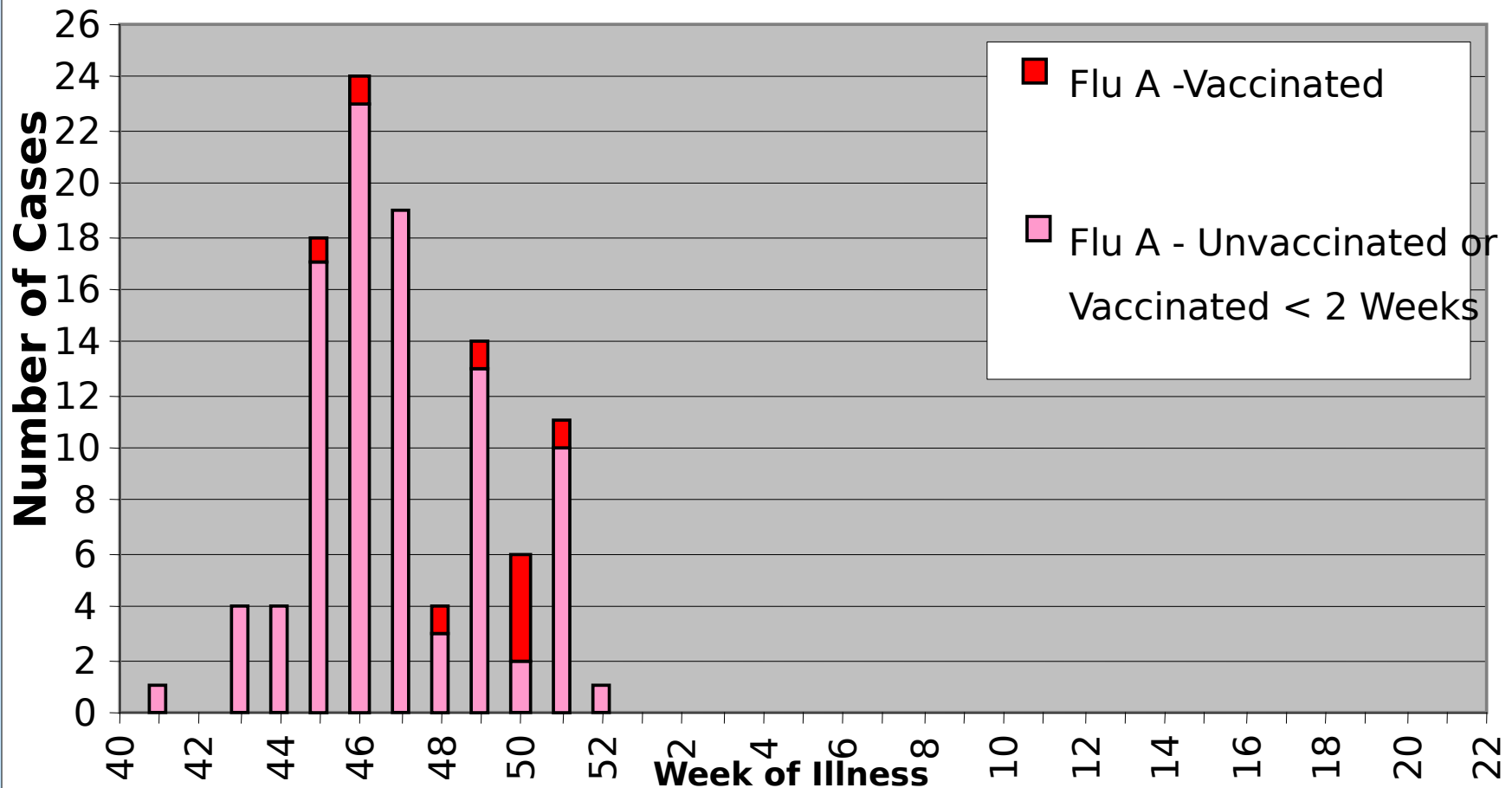


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# NHRC Data



## Vaccination Status of Influenza Cases 2003-0



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# Vaccine Effectiveness-NHRC



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- ▢ **Model 1 (Max vaccinated + 14 days from date vacc to presentation to be protective):**
  - **Effectiveness: 94%**
  
- ▢ **Model 2 (Max vaccinated + 7 days to protective)**
  - **Effectiveness: 93.6%**
  
- ▢ **Model 3 (10% Not Vaccinated + 14 days to be protected)**
  - **Effectiveness: 91%**
  
- ▢ **Model 4 (10% Not Vaccinated + 7 days to be protected)**
  - **Effectiveness: 87%**

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# ***ARMY Vaccine Effectiveness STUDY***



- ▮ **CHPPM sent EPI-CON team**
- ▮ **AFIOH participated**
- ▮ **Based on outbreak at Ft Lee, Virginia**
- ▮ **Significant confounding and interaction**
- ▮ **No conclusions can be drawn**





# ***AFIOH (AF) Study***



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- ▮ **Secondary case cohort identified from index cases (AF only)**
  - Index cases: influenza culture positive
  - Secondary Family Contacts: Cohort for study
- ▮ **Data from all family members (including index)**
  - Influenza vaccinations
  - Febrile respiratory illnesses within 2 wks of index case
  - Symptoms/signs (to help verify ILI illness)
- ▮ **Calculate secondary attack rate**
  - Compare vaccinated and unvaccinated





# ***AF VE Data***



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- ▮ **414 eligible**
- ▮ **Data obtained from 243 persons**
  - 68 index cases
  - 175 household contacts
- ▮ **Vaccination in household contacts**
  - 73 (42%) received vaccine
  - 102 (58%) did not
- ▮ **Secondary attack rate**
  - Vaccinated: 17 (23%, [0.14-0.35])
  - Unvaccinated: 39 (38% [0.29-0.48])
- ▮ **Vaccine Effectiveness: 39% [0.01-0.62]**

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# ***Future AF VE Studies***



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- ▮ **Repeat this season's approach prospectively with weekly interviewing (reduce recall bias)**
- ▮ **Include active case finding at sites with ongoing transmission, identifying these locations using:**
  - Lab submissions, ESSENCE, other reports
  - Index cases: influenza culture positive
  - Surveillance data sources to assess extent of local outbreak
- ▮ **Validate data with medical records, vaccination registry, labs**
- ▮ **Use secondary attack rates to estimate VE**
- ▮ **Pending IRB & AF approval**

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# 2003-2004 Summary



**Overall this has been an exceptional year**

- ▮ **One strain predominated (more so than in the last five years)**
  - A/H3N2 – Fujian in most locations
  - Few Influenza B and A/H1N1. No H5/H7 at this point
- ▮ **Molecular Analysis**
  - H3N2 viruses: nearly 100% variant from vaccine strain
- ▮ **Chance to refine the influenza lab plan**
  - Early, moderately severe season resulted in large influx of specimens submitted at the same time
    - Some specimens sent to NHRC
    - Brooks lab instituted an internal “surge” process to handle volume

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# 2003-2004 Summary



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## ▮ **Increased surveillance**

- Deployed locations in Qatar and Kyrgyzstan
- 4 new sentinel site locations
  - Alaska (Ketchikan CGS)
  - Washington State (NAS Bremerton)
  - California (NMC San Diego)
  - Italy (Aviano AB)
- Renewed specimen submission from Thailand and Nepal

## ▮ **Able to perform vaccine effectiveness studies**

- NHRC: VE = 91% (non-generalizable cohort)
- CHPPM: VE = 40-100% (CIs include 0)
- AF: VE = 39% (Generalizable population)

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# ***Annual DoD Influenza Surveillance Working Group Meeting***

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- ▮ **Directed by ASD/HA policy**
- ▮ **Scheduled for 19 - 20 May (San Diego, CA)**
- ▮ **Participants**
  - **Key players**
    - AFIOH, NHRC, DoD-GEIS, ASD/HA, AF/SG, Army
  - **Other Guests**
    - CDC, VA, Overseas labs
- ▮ **Topics**
  - **Season Summary**
  - **Vaccine Effectiveness**
  - **Sentinel site selection**
  - **Interaction with overseas labs**
  - **Planning for next season**

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# **Questions & Discussion**







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# ***Percent Positive Flu Panel***

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**69%**

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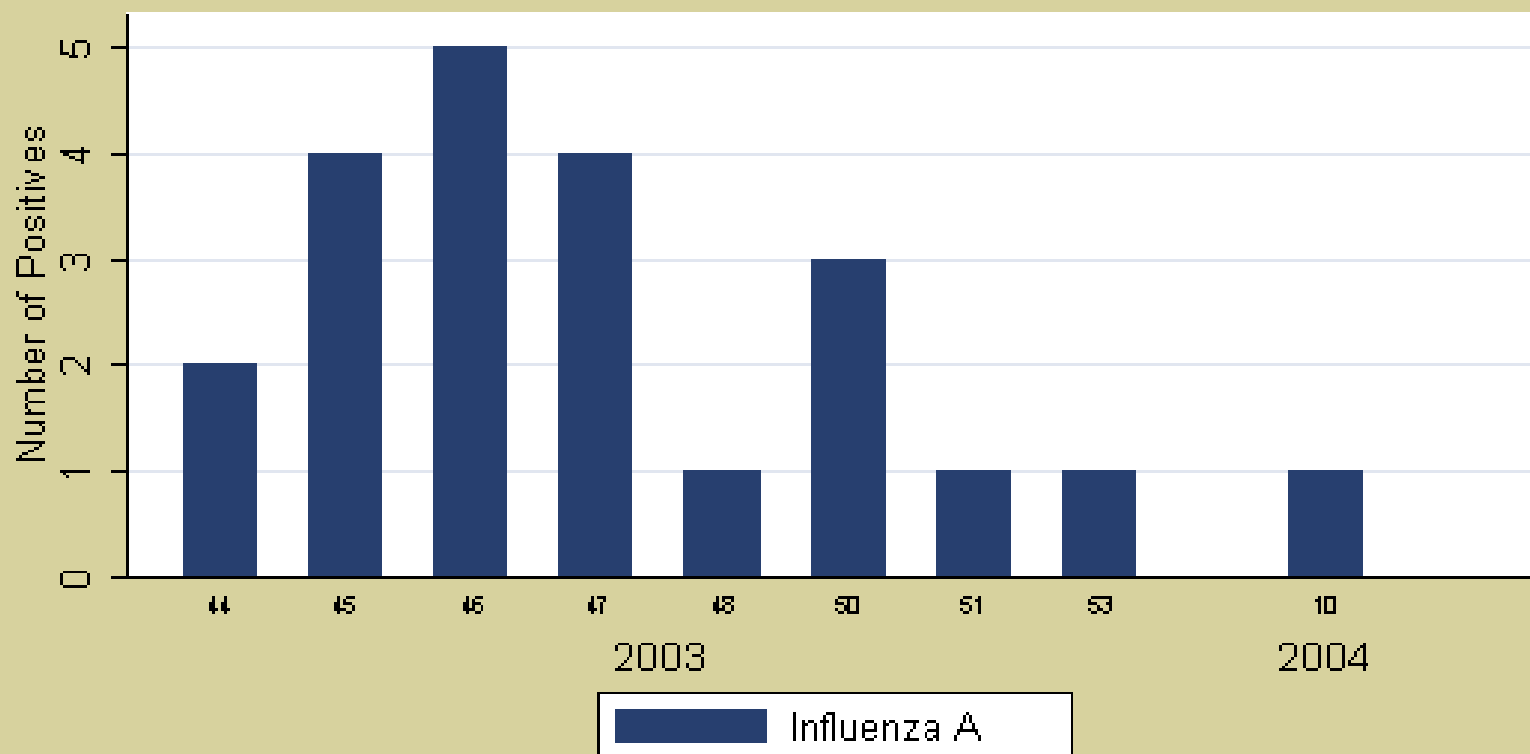


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# Results from Deployed Locations



Positive Viral Results by Week and Year  
for Deployed: Qatar/Kyrgyzstan  
Influenza Season 2003-2004



As of 22 Apr 2004

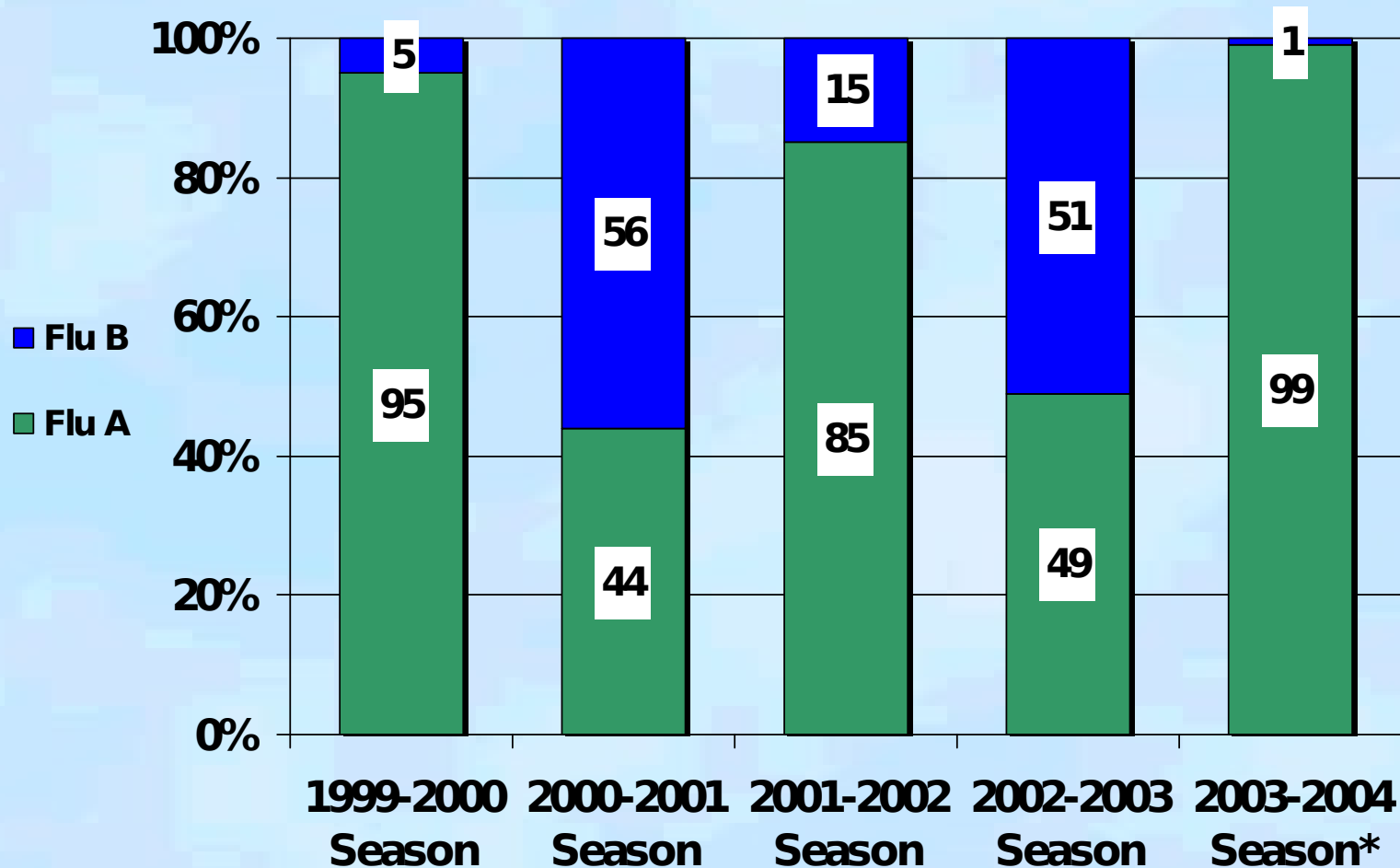
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# Influenza History



\*Current as of 19 Apr 04

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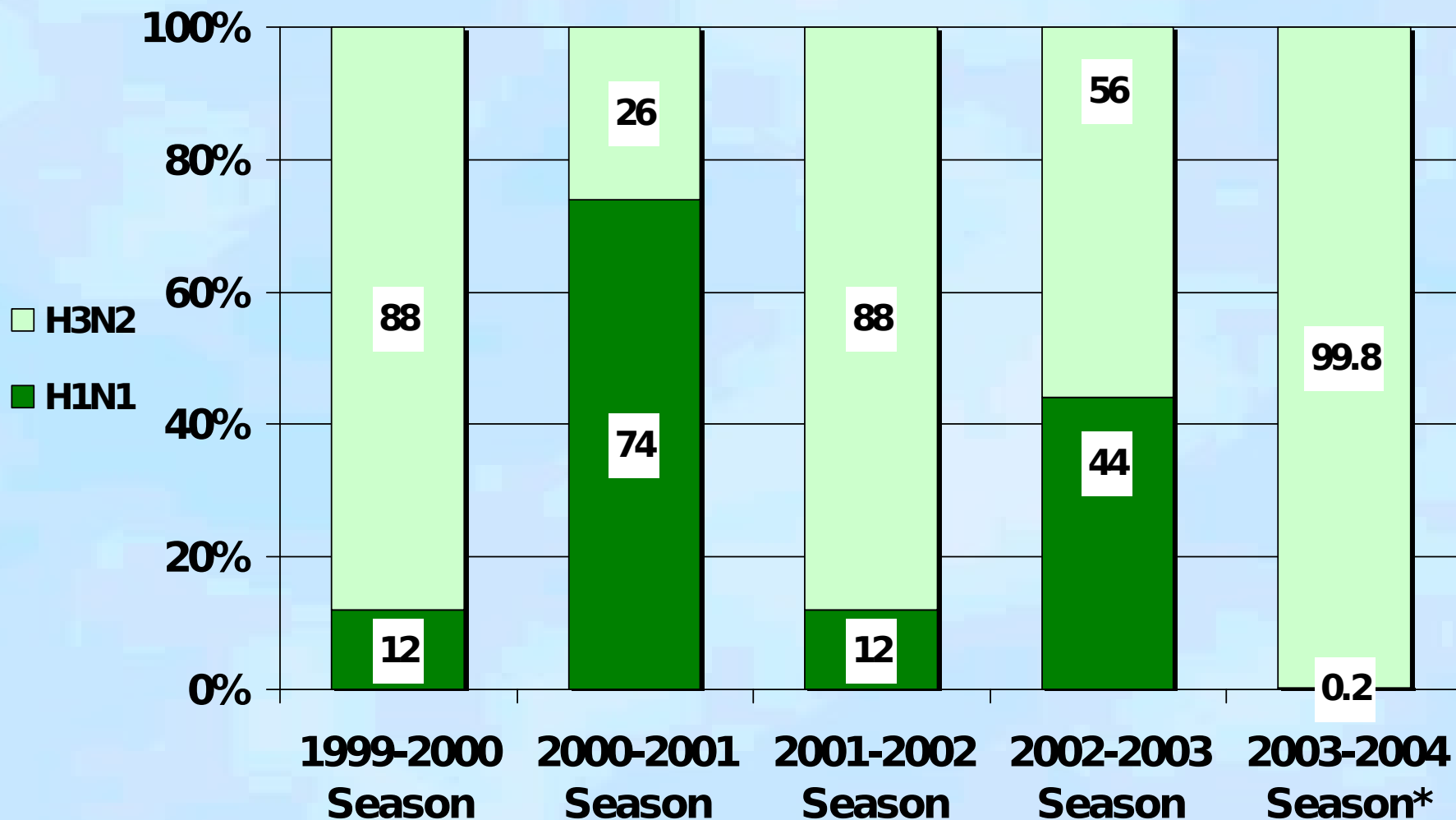




# Influenza A Subtypes



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\*Current as of 19  
Apr 04

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